

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
20 October 2005 (20.10.2005)

PCT

(10) International Publication Number  
**WO 2005/099205 A1**

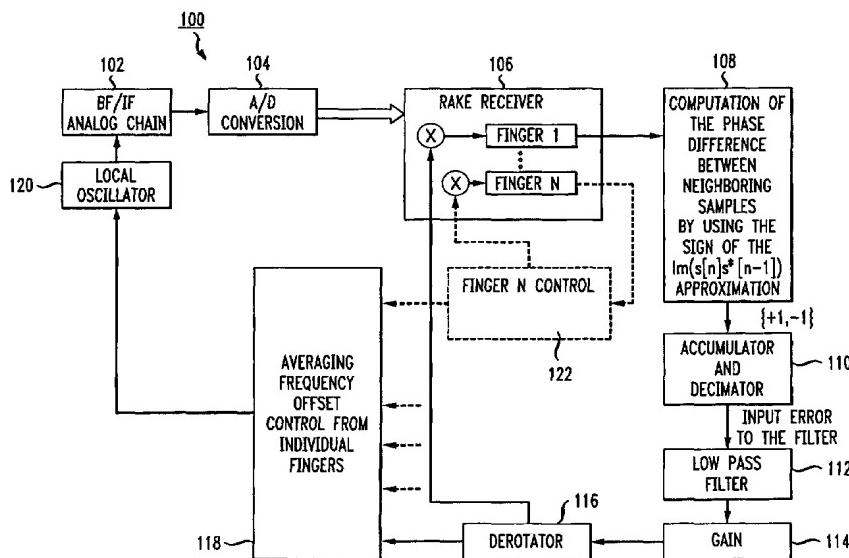
- (51) International Patent Classification<sup>7</sup>: **H04L 27/00**
- (21) International Application Number:  
PCT/US2004/006807
- (22) International Filing Date: 8 March 2004 (08.03.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (71) Applicant (for all designated States except US): THOMSON LICENSING S.A. [FR/FR]; 46, Quai A. Le Gallo, F-92648 Boulogne (FR).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): GAO, Wen [CN/US]; 21-21 Quail Ridge, Plainsboro, NJ 08536 (US). KOSTIC, Zoran [US/US]; 8 Sunrise Circle, Holmdel, NJ 07733 (US). KEEL, Alton, Shelbourne [US/US]; 4013 Long Leaf Drive, Melbourne, FL 32940 (US).
- (74) Agents: TRIPOLI, Joseph, S. et al.; Thomson Licensing Inc., Two Independence Way, Suite #200, Princeton, New Jersey 08540 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR ROBUST AUTOMATIC FREQUENCY CONTROL IN CDMA SYSTEMS WITH CONSTANT PILOT SIGNALS



(57) **Abstract:** There is provided a method for generating an error signal for an automatic frequency control (AFC) loop in a Code Division Multiple Access (CDMA) system. Sign information relating to phase differences in received pilot signals is accumulated. In one embodiment, the accumulated sign information is compared against predetermined threshold levels. The error signal is generated when at least one of the predetermined threshold levels is satisfied. In a second embodiment, the accumulated sign information is decimated. An output of the decimating step is utilized as the error signal for the AFC loop.

**WO 2005/099205 A1**